FIRE SCIENCE
CURRICULUM FRAMEWORK

This document was prepared by:

Office of Career Readiness, Adult Learning, and Education Options
Nevada Department of Education
755 N. Roop Street, Suite 201
Carson City, NV 89701

www.doe.nv.gov

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All Nevadans ready for success in the 21st century

MISSION

To improve student achievement and educator effectiveness by ensuring opportunities, facilitating learning, and promoting excellence

INTRODUCTION

The Nevada Career and Technical Education (CTE) Curriculum Frameworks are a resource for Nevada's public schools and charter schools to design, implement, and assess their CTE programs and curriculum. The content standards identified in this document are listed as a model for the development of local district programs and curriculum. They represent rigorous and relevant expectations for student performance, knowledge, and skill attainment which have been validated by industry representatives.

This curriculum framework ensures the following:

- CTE course(s) and course sequence teaches the knowledge and skills required by industry through applied learning methodology and, where appropriate, work-based learning experiences that prepare students for careers in high-wage, high-skill, and/or in-demand fields. Regional and state economic development priorities shall play an important role in determining program approval. Some courses also provide instruction focused on personal development.
- CTE course(s) and course sequence includes leadership and employability skills as an integral part of the curriculum.
- CTE course(s) and course sequence is part of a rigorous program of study and includes sufficient technical challenge to meet state and/or industry-standards.

NEVADA DEPARTMENT OF EDUCATION

CURRICULUM FRAMEWORK FOR FIRE SCIENCE

PROGRAM INFORMATION

Program Title:	**Fire Science**
State Skill Standards:	**Fire Science**
Standards Reference Code:	**FIRE**
Career Cluster:	**Law, Public Safety, Corrections & Security**
Career Pathway:	**Emergency and Fire Management**
Program Length:	**2 levels {L1, L2C}**
Program Assessments:	**TBD**
	Workplace Readiness Skills
CTSO:	**HOSA: Future Health Professionals**
Grade Level:	**9-12**
Industry Certifications:	**See Nevada's Approved Certification Listing**

PROGRAM PURPOSE

The purpose of this program is to prepare students for postsecondary education and employment in the Fire Science industry.

The program includes the following state standards:

- Nevada CTE Skill Standards: Fire Science
- Employability Skills for Career Readiness
- Nevada Academic Content Standards (alignment shown in the Nevada CTE Skill Standards):
  - English Language Arts
  - Mathematics
  - Science
- Common Career Technical Core (alignment shown in the Nevada CTE Skill Standards)

CAREER CLUSTERS

The National Career Clusters® Framework provides a vital structure for organizing and delivering quality CTE programs through learning and comprehensive programs of study (POS). In total, there are 16 Career Clusters in the National Career Clusters Framework, representing more than 79 Career Pathways to help students navigate their way to greater success in college and career. As an organizing tool for curriculum design and instruction, Career Clusters provide the essential knowledge and skills for the 16 Career Clusters and their Career Pathways.*

*Cite: National Association of State Directors of Career Technical Education Consortium. (2012). Retrieved from https://cte.careertech.org/sites/default/files/CareerClustersPathways.pdf and https://www.air.org/sites/default/files/CTEClusters.pdf

PROGRAM OF STUDY

The program of study illustrates the sequence of academic and career and technical education coursework that is necessary for the student to successfully transition into postsecondary educational opportunities and employment in their chosen career path. (NAC 389.803)

PROGRAM STRUCTURE

The core course sequencing with the complementary courses provided in the following table serves as a guide to schools for their programs of study. Each course is listed in the order in which it should be taught. Complete program sequences are essential for the successful delivery of all state standards in each program area. A program does not have to utilize the complementary courses for students to complete their program of study.

FIRE SCIENCE

Required Core Course Sequence (R) with Complementary Courses (C)

Required/ Complementary	Course Title	Abbreviated Name	CIP Code	SCED Subject Area	SCED Course Identifier	SCED Course Level	SCED Unit Credit	SCED Course Sequence	SCED Course Number
R	Fire Science I	FIRE SCI I	43.0203	15	151	G	1.00	12	15151G1.0012
R	Fire Science II	FIRE SCI II	43.0203	15	151	G	1.00	22	15151G1.0022
C	Fire Science Advanced Studies	FIRE SCI AS	43.0203	15	151	E	1.00	11	15151E1.0011
C	CTE Work Experience - Law, Public Safety, Corrections, and Security	WORK EXPER LAW	99.0012	15	998	G	1.00	11	15998G1.0011

STATE SKILL STANDARDS

The state skill standards are designed to clearly state what the student should know and be able to do upon completion of an advanced high school career and technical education (CTE) program. The standards are designed for the student to complete all standards through their completion of a program of study. The standards are designed to prepare the student for the end-of-program technical assessment directly aligned to the standards. (Paragraph (a) of Subsection 1 of NAC 389.800)

EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS

Employability skills, often referred to as "soft skills," have for many years been a recognizable component of the standards and curriculum in career and technical education programs. The twenty-one standards are organized into three areas: (1) Personal Qualities and People Skills; (2) Professional Knowledge and Skills; and (3) Technology Knowledge and Skills. The standards are designed to ensure students graduate high school properly prepared with skills employers prioritize as the most important. Instruction on all twenty-one standards must be part of each course of the CTE program. (Paragraph (d) of Subsection 1 of NAC 389.800)

CURRICULUM FRAMEWORK

The Nevada CTE Curriculum Frameworks are organized utilizing the recommended course sequencing listed in the program of study and the CTE Course Catalog. The framework identifies the recommended content standards, performance standards, and performance indicators that should be taught in each course.

CAREER AND TECHNICAL STUDENT ORGANIZATIONS (CTSOS)

To further the development of leadership and technical skills, students must have opportunities to participate in one or more of the Career and Technical Student Organizations (CTSOs). CTSOs develop character, citizenship, and the technical, leadership and teamwork skills essential for the workforce and their further education. Their activities are considered a part of the instructional day when they are directly related to the competencies and objectives in the course. (Paragraph (a) of Subsection 3 of NAC 389.800)

WORKPLACE READINESS SKILLS ASSESSMENT

The Workplace Readiness Skills Assessment has been developed to align with the Nevada CTE Employability Skills for Career Readiness Standards. This assessment provides a measurement of student employability skills attainment. Students who complete a program will be assessed on their skill attainment during the completion level course. Completion level courses are identified in the Program Structure table as SCED Course Level "G" and SCED Course Sequence 22 or 33. (Paragraph (d) of Subsection 1 of NAC 389.800)

END-OF-PROGRAM TECHNICAL ASSESSMENT

An end-of-program technical assessment may be implemented for those programs with current industry validated standards to align with the Nevada CTE Skill Standards for this program. This assessment provides a measurement of student technical skill attainment. Students who complete a program will be assessed on their skill attainment during the completion level course. Completion level courses are identified in the Program Structure table as SCED Course Level "G" and SCED Course Sequence 22 or 33. (Paragraph (e) of Subsection 1 of NAC 389.800)

CERTIFICATE OF SKILL ATTAINMENT

Each student who completes a course of study must be awarded a certificate which states that they have attained specific skills in the industry being studied and meets the following criteria: A student must maintain a 3.0 grade point average in their approved course of study, pass the Workplace Readiness Skills Assessment, and pass the end-of-program technical assessment. (Subsection 4 of NAC 389.800)

CTE ENDORSEMENT ON A HIGH SCHOOL DIPLOMA

A student qualifies for a CTE endorsement on their high school diploma after successfully completing the following criteria: (1) completion of a CTE course of study in a program area; (2) completion of academic requirements governing receipt of a standard diploma; and (3) meet all requirements for the issuance of the Certificate of Skill Attainment. (NAC 389.815)

CTE COLLEGE CREDIT

CTE College Credit is awarded to students based on articulation agreements established by each college for the CTE program, where the colleges will determine the credit value of a full high school CTE program based on course alignment. An articulation agreement will be established for each CTE program designating the number of articulated credits each college will award to students who complete the program.

CTE College Credit is awarded to students who: (1) complete the CTE course sequence with a grade-point average of 3.0 or higher; (2) pass the state end-of-program technical assessment for the program; and (3) pass the Workplace Readiness Assessment for employability skills.

Pre-existing articulation agreements will be recognized until new agreements are established according to current state policy and the criteria shown above.

Please refer to the local high school's course catalog or contact the local high school counselor for more information. (Paragraph (b) of Subsection 3 of NAC 389.800)

ACADEMIC CREDIT FOR CTE COURSEWORK

Career and technical education courses meet the credit requirements for high school graduation (1 unit of arts and humanities or career and technical education). Some career and technical education courses meet academic credit for high school graduation. Please refer to the local high school's course catalog or contact the local high school counselor for more information. (NAC 389.672)

CORE COURSES

RECOMMENDED STUDENT PERFORMANCE STANDARDS

COURSE INFORMATION

Course Title: **Fire Science I**
Abbreviated Name: **Fire SCI I**
Credits: **1**
Prerequisite: **None**
CTSO: **HOSA: Future Health Professionals**

COURSE DESCRIPTION

This course introduces the principles and procedures employed in fire services. Students will practice response procedures in order to respond to small and catastrophic emergency incidents and will study firefighter safety, fire behavior, personal protective equipment, building construction, service equipment, and organizational rules that define guidelines that govern emergency fire management. Students will compare career field and related careers to develop a personal perspective and an institutional professional growth plan to develop team building and leadership skills related to fire science.

TECHNICAL STANDARDS

CONTENT STANDARD 1.0: **INTEGRATE CAREER AND TECHNICAL STUDENT ORGANIZATIONS (CTSOS)**
Performance Standard 1.1: Explore the History and Organization of CTSOs
Performance Indicators: 1.1.1-1.1.3
Performance Standard 1.2: Develop Leadership Skills
Performance Indicators: 1.2.1-1.2.6
Performance Standard 1.3: Participate in Community Service
Performance Indicators: 1.3.1-1.3.3
Performance Standard 1.4: Develop Professional and Career Skills
Performance Indicators: 1.4.1-1.4.5
Performance Standard 1.5: Understand the Relevance of Career and Technical Education (CTE)
Performance Indicators: 1.5.1-1.5.3
CONTENT STANDARD 2.0: **PRACTICE FIREFIGHTER SAFETY AND HEALTH**
Performance Standard 2.1: Describe the Scope of Departmental Organizations
Performance Indicators: 2.1.1-2.1.6
Performance Standard 2.2: Interpret Written Agency Policies and Procedures
Performance Indicators: 2.2.1-2.2.3
Performance Standard 2.3: Explore Safety and Health
Performance Indicators: 2.3.1-2.3.7
CONTENT STANDARD 3.0: **UNDERSTAND THE SCIENCE OF FIRE BEHAVIOR**
Performance Standard 3.1: Apply Concepts of Science of Fire Behavior
Performance Indicators: 3.1.1-3.1.6
Performance Standard 3.2: Examine Classification of Fires
Performance Indicators: 3.2.1
CONTENT STANDARD 4.0: **IDENTIFY PERSONAL PROTECTIVE EQUIPMENT**
Performance Standard 4.1: Implement Personal and Departmental Safety Regulations
Performance Indicators: 4.1.1-4.1.6

Performance Standard 4.2:	Apply Concepts of Respiratory Protection
Performance Indicators:	4.2.1-4.2.8
CONTENT STANDARD 5.0:	**CLASSIFY BUILDING CONSTRUCTION AND COMPONENTS**
Performance Standard 5.1:	Describe Construction Terminology
Performance Indicators:	5.1.1-5.1.2
Performance Standard 5.2:	Describe Construction Classification
Performance Indicators:	5.2.1-5.2.2
Performance Standard 5.3:	Identify Building Components
Performance Indicators:	5.3.1
Performance Standard 5.4:	Identify Building Fire Detection and Suppression Systems
Performance Indicators:	5.4.1-5.4.2
CONTENT STANDARD 6.0:	**DESCRIBE THE CLASSIFICATIONS OF PORTABLE FIRE EXTINGUISHERS**
Performance Standard 6.1:	Describe the Classifications of Extinguishers
Performance Indicators:	6.1.1-6.1.4

EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS

CONTENT STANDARD 1.0:	**DEMONSTRATE EMPLOYABILITY SKILLS FOR CAREER READINESS**
Performance Standard 1.1:	Demonstrate Personal Qualities and People Skills
Performance Indicators:	1.1.1-1.1.7
Performance Standard 1.2:	Demonstrate Professional Knowledge and Skills
Performance Indicators:	1.2.1-1.2.10
Performance Standard 1.3:	Demonstrate Technology Knowledge and Skills
Performance Indicators:	1.3.1-1.3.4

ALIGNMENT TO THE NEVADA ACADEMIC CONTENT STANDARDS*

English Language Arts:	Reading Standards for Literacy in Science and Technical Subjects Writing Standards for Literacy in Science and Technical Subjects Speaking and Listening
Mathematics:	Mathematical Practices Algebra
Science:	Life Science

*Refer to the Fire Science Standards for alignment by performance indicator.

COURSE INFORMATION

Course Title: Fire Science II
Abbreviated Name: FIRE SCI II
Credits: 1
Prerequisite: Fire Science I
Program Assessments: Fire Science
Workplace Readiness Skills
CTSO: HOSA: Future Health Professionals

COURSE DESCRIPTION

This course is a continuation of Fire Science I. This course provides fire science students with instruction in advanced techniques and critical thinking. This course provides instruction in the primary factors affecting wildland fire behavior, suppression, ventilation, water supply, loss control, medical care, and awareness of potential hazards and human factors on the fire line. The appropriate use of technology and industry-standard equipment is an integral part of this course

TECHNICAL STANDARDS

CONTENT STANDARD 1.0: INTEGRATE CAREER AND TECHNICAL STUDENT ORGANIZATIONS (CTSOS)
Performance Standard 1.1: Explore the History and Organization of CTSOs
Performance Indicators: 1.1.1-1.1.3
Performance Standard 1.2: Develop Leadership Skills
Performance Indicators: 1.2.1-1.2.6
Performance Standard 1.3: Participate in Community Service
Performance Indicators: 1.3.1-1.3.3
Performance Standard 1.4: Develop Professional and Career Skills
Performance Indicators: 1.4.1-1.4.5
Performance Standard 1.5: Understand the Relevance of Career and Technical Education (CTE)
Performance Indicators: 1.5.1-1.5.3
CONTENT STANDARD 7.0: EXPLORE FIRE SERVICE EQUIPMENT
Performance Standard 7.1: Identify Rescue Equipment
Performance Indicators: 7.1.1-7.1.5
Performance Standard 7.2: Identify Ground Ladders
Performance Indicators: 7.2.1-7.2.5
Performance Standard 7.3: Identify Fire Hoses
Performance Indicators: 7.3.1-7.3.6
Performance Standard 7.4: Identify Fire Streams
Performance Indicators: 7.4.1-7.4.3
CONTENT STANDARD 8.0: EXPLORE TACTICAL VENTILATION
Performance Standard 8.1: Define Tactical Ventilation
Performance Indicators: 8.1.1-8.1.4
Performance Standard 8.2: Identify Forcible Entry Principles
Performance Indicators: 8.2.1-8.2.4

CONTENT STANDARD 9.0:	**CLASSIFY WATER SUPPLY**
Performance Standard 9.1:	Define the Principles of Water Supply Systems
Performance Indicators:	9.1.1-9.1.4
CONTENT STANDARD 10.0:	**EXPLORE THE PRINCIPLES OF LOSS CONTROL**
Performance Standard 10.1:	Describe Loss Control
Performance Indicators:	10.1.1-10.1.3
Performance Standard 10.2:	Demonstrate Salvage Cover Use
Performance Indicators:	10.2.1-10.2.2
CONTENT STANDARD 11.0:	**EXPLORE FIRE-BASED EMERGENCY MEDICAL CARE**
Performance Standard 11.1:	Complete Emergency Medical Training
Performance Indicators:	11.1.1-11.1.4
CONTENT STANDARD 12.0:	**DEFINE HAZARDOUS MATERIALS AWARENESS**
Performance Standard 12.1:	Introduction to Hazardous Materials
Performance Indicators:	12.1.1-12.1.5
CONTENT STANDARD 13.0:	**EXAMINE THE CONCEPTS OF WILDLAND FIRE**
Performance Standard 13.1:	Characterize the Concepts of Basic Wildland Fire Behavior
Performance Indicators:	13.1.1-13.1.3
Performance Standard 13.2:	Apply Concepts of Basic Wildland Fire Suppression
Performance Indicators:	13.2.1-13.2.9

EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS

CONTENT STANDARD 1.0:	**DEMONSTRATE EMPLOYABILITY SKILLS FOR CAREER READINESS**
Performance Standard 1.1:	Demonstrate Personal Qualities and People Skills
Performance Indicators:	1.1.1-1.1.7
Performance Standard 1.2:	Demonstrate Professional Knowledge and Skills
Performance Indicators:	1.2.1-1.2.10
Performance Standard 1.3:	Demonstrate Technology Knowledge and Skills
Performance Indicators:	1.3.1-1.3.4

ALIGNMENT TO THE NEVADA ACADEMIC CONTENT STANDARDS*

English Language Arts:	Reading Standards for Literacy in Science and Technical Subjects
	Writing Standards for Literacy in Science and Technical Subjects
	Speaking and Listening
Mathematics:	Numbers and Quantity
	Statistics and Probability
Science:	Life Science
	Earth and Space

*Refer to the Fire Science Standards for alignment by performance indicator.

COMPLEMENTARY COURSES

RECOMMENDED STUDENT PERFORMANCE STANDARDS

Programs that utilize the complementary courses can include the following:

- Continuation course(s)
- Advanced Studies course
- Lab course(s)
- CTE Work Experience courses

COURSE INFORMATION

Course Title: **Fire Science Advanced Studies**

Abbreviated Name: **FIRE SCI AS**

Credits: **1**

Prerequisite: **Fire Science II**

CTSO: **HOSA: Future Health Professionals**

COURSE DESCRIPTION

This course is offered to students who have achieved all content standards in a program and desire to pursue advanced study through investigation and in-depth research. Students are expected to work independently or in a team and consult with their supervising teacher for guidance. The supervising teacher will give directions, monitor, and evaluate the students' topic of study. Coursework may include various work-based learning experiences such as internships and job shadowing, involvement in a school-based enterprise, completion of a capstone project, and/or portfolio development. This course may be repeated for additional instruction and credit.

TECHNICAL STANDARDS

Students have achieved all program content standards and will pursue advanced study through investigation and in-depth research.

EMPLOYABILITY SKILLS FOR CAREER READINESS STANDARDS

Students have achieved all program content standards and will pursue advanced study through investigation and in-depth research.

SAMPLE TOPICS:

- Social Aspects of Fire
- Emergency Management
- Fire Investigation
- Urban Search and Rescue

COMPLEMENTARY COURSES

RECOMMENDED STUDENT PERFORMANCE STANDARDS

Programs that utilize the complementary courses can include the following:

- Continuation course(s)
- Advanced Studies course
- Lab course(s)
- CTE Work Experience courses

COURSE INFORMATION

Course Title: **CTE Work Experience – Law, Public Safety, Corrections, and Security**

Abbreviated Name: **WORK EXPER LAW**

Credits: **1**

Prerequisite: **Level 1 course and concurrently enrolled in the Level 2 or higher course**

CTSO: **HOSA: Future Health Professionals**

COURSE DESCRIPTION

This course is designed to expand the students' opportunities for applied learning. This course provides an in-depth CTE work experience that applies the processes, concepts, and principles as described in the classroom instruction. This course will encourage students to explore and develop advanced skills through work-based learning directly related to the program of study. The course must follow NAC 389.562, 389.564, 389.566 regulations.